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ABSTRACT

The City of Austin (Texas) provided funds for a supplementary educational activity to involve at-risk minority high school students in water quality issues. The program attempts to provide an interesting and authentic activity that also develops academic skills. Principal activities were testing river water for pollutants and the tutoring of at-risk students by their student mentors. In addition to the 9 1992-93 student trainees who continued in the program, the 1993-94 Youth River Watch Program recruited and trained 37 minority, at-risk students in river water monitoring. As a group, participants achieved higher grade point averages than the mean for all Austin high school students. All participants agreed that they would encourage others to participate, and all planned to continue participation. In addition, the water quality database for the Colorado River and its tributaries was improved. Recommendations were made for program continuation and continued student recruitment and training. (Contains 1 summary table, 10 figures, and 4 references.) (SLD)

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A River Runs Through It: The Austin Youth River Watch Final Report 1993-94 Executive Summary

Austin Independent School District
Office of Research and Evaluation

Author: Jeannine Turner

Program Description

The City of Austin provided funds for a supplementary educational activity to involve at-risk minority high school students in water quality issues. The program's intent is to encourage at-risk students to remain in school by providing an interesting, authentic activity to use in the development of academic skills. Throughout program activities, at-risk students interact with positive role models for social and academic support. Principal program activities were testing river water for pollutants and the tutoring of at-risk students by their student mentors. Both student mentors and at-risk student trainees were paid for their time spent testing river water and in tutoring sessions. From September 1993 through August 1994, the Austin Youth River Watch Program received $82,303 ($82,076 allocated this year, plus $227 carried over from 1992-93) from the City of Austin for program implementation. The Lower Colorado River Authority also assisted by providing training and expertise.

The City of Austin funds provided:

- Water testing equipment and supplies,
- Office rental, supplies, and equipment,
- Stipends for student involvement,
- A 3/4-time program coordinator, and
- A consultant to evaluate the 1993-94 Austin Youth River Watch Program.

Major Findings

1. In addition to the nine 1992-93 student trainees that continued on in the program, the Austin Youth River Watch Program recruited and trained 37 minority, at-risk students in river water monitoring (p. 7).
2. Eight 1992-93 student trainees were promoted to student mentor positions for the 1993-94 school year (p. 10).
3. None of the program students dropped out of school; however, one student was recommended to be retained at his/her 1993-94 grade level (p. 12).
4. As a group, Austin Youth River Watch trainees and at-risk mentors achieved a higher grade point average (GPA), compared to the mean GPA of all AISD high school students (p. 13).
5. All Austin Youth River Watch Program students agreed that they would encourage others to participate in the Austin Youth River Watch Program, and they planned to continue their participation. Many or most of the students agreed that participation had helped them know more about environmental issues (85%), be more interested (54%), and do better (69%), in their school work (p. 14).
6. Through the students' participation in the Austin Youth River Watch Program, the water quality data base of the Colorado River and its tributaries has been improved (p. 20).

Budget Implications

Mandate: External funding agency

Funding Amount: $82,303 (1993-94 allocation of $82,076 and $227 carryover)

Funding Source: City of Austin

Implications: The Austin Youth River Watch Program provided funding to involve minority high school students in water quality issues and to reduce the dropout rate through positive role model interaction with academically successful students. The program addresses the District's first strategic objective of having every student function at his/her optimal level of achievement and of having every student progress successfully through the AISD educational system. The program also addresses the District's third strategic objective of having one hundred percent of all students who enter AISD graduate. Funded activities address the District's value of developing and coordinating a network of student support services and of acquiring public and private funds for developing effective partnerships in the community.

Recommendations

Based on the present evaluation findings, the following recommendations are offered:

- The Austin Youth River Watch Program should continue its river water monitoring service for the City of Austin and continue to add to the water quality data base of the Lower Colorado River Authority.
- The Austin Youth River Watch Program should continue to recruit and train minority at-risk students for river water monitoring and interaction with successful and experienced river water monitoring student role models. The program should be expanded to include more public and private high school students.
- The Austin Youth River Watch Program should continue to tutor at-risk student trainees and to expose these students to activities that include water quality and/or environmental themes.

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PROGRAM EFFECTIVENESS SUMMARY

AUSTIN YOUTH RIVER WATCH PROGRAM
1993-94

PROGRAM	RATING	ALLOCATION (COST)	NUMBER OF STUDENTS SERVED*	COST PER STUDENT	NUMBER OF DROPOUTS		PREDICTED DROPOUTS WHO STAYED IN SCHOOL (EFFECT)		COST PER STUDENT KEPT IN SCHOOL (COST/ EFFECT)
					Predicted	Obtained	#	%	
Austin Youth River Watch Funding Source: External Grades: 6-12	+	$82,303	46	$1,789	2	0	2	100%	$41,151

Rating is expressed as contributing to any of the five AISD strategic objectives.

- \+ Positive, needs to be maintained or expanded
- 0 Not significant, needs to be improved and modified
- \- Negative, needs major modification or replacement
- Blank Unknown

Cost is the expense over the regular District per-student expenditure of about $4,000.

- 0 *No cost* or minimal cost
- $ *Indirect costs* and overhead, but no separate budget
- $$ *Some direct costs*, but under $500 per student
- $$$ *Major direct costs* for teachers, staff, and/or equipment in the range of $500 per student or more

* Total number of students served represents students attending both public and private schools (46); however, the predicted and obtained dropout rate is based on the number of students attending AISD public schools (37) for whom full student information is available.

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CONCLUSION

Overall, City of Austin funds were used effectively to improve minority student interest and involvement in both water quality issues and their education. This (1993-94) is the second year of program implementation for the Austin Youth River Watch Program and many students (20) were able to continue from the first year (1992-93) of the program. Eight of the continuing students were promoted to mentor positions. The Austin Youth River Watch Program recruited and trained an additional 37 minority at-risk students in river water monitoring. Although most 1993-94 Austin Youth River Watch Program participants attended Austin public schools, one private middle school, one alternative learning center, and one home study student are also represented in the program. Student trainees were tutored in mathematics and science. In addition, they attended special activities that centered on water quality and/or environmental issues to promote group cohesiveness and to broaden their knowledge of environmental careers. *Student involvement in the Austin Youth River Watch Program had a positive effect on their remaining in school and achieving greater academic success.* Students also performed a valuable service to the community. Because of their river water monitoring, the water quality data base at the Lower Colorado River Authority has been enhanced and expanded.

EVALUATION OVERVIEW

Data for the evaluation of the Austin Youth River Watch program were obtained from the following sources:

- Interviews with the program coordinator and the program director provided information on program funding, program implementation, and program activities.
- Student rosters provided by the program coordinator were used to access AISD student information.
- Questionnaires, designed by AISD's Office of Research and Evaluation (ORE), provided student perceptions of program benefits and of the effect of their participation.
- AISD student data files supplied information concerning student characteristics, grades, and grade point averages.
- ORE's GENESYS (GENeric Evaluation SYStem) provided analysis and comparisons of Austin Youth River Watch Program students with AISD public school students.

INTRODUCTION

The Colorado River Watch Foundation (CRWF) is a nonprofit 501 (c) (3) organization dedicated to the scientific study, preservation, and conservation of the Colorado River. In the fall of 1991, the CRWF approached the City of Austin with a proposal for involving at-risk minority students in river monitoring activities. The overall intent of the proposal was to reduce the dropout potential of at-risk minority students through positive role model interaction and to encourage them in pursuing science/environmental careers. Funding for the 1993-94 school year has been drawn from the water and wastewater utility rates, electric utility rates, and drainage fees administered by the environment and conservation services department. The Lower Colorado River Authority (LCRA) also assisted by providing training and expertise. For a detailed account of the program's creation and initial implementation, see the Austin Youth River Watch Program 1992-93 Final Report (ORE Publication No. 92.33).

The Austin Youth River Watch Program, which grew out of a combined concern for water quality protection and a desire to assist at-risk minority students, has three major goals:

1. To improve the water quality of the Colorado River and its tributaries through ecological understanding and systems analysis,

2. To reduce the dropout rate of students in the public and private high schools of Austin through positive role model interaction, and

3. To increase the participation of minority students in critical environmental issues and in technical careers that require understanding of science and mathematics.

The fundamental principle behind the Austin Youth River Watch Program is to engage at-risk students in learning about mathematics, science, and English by involving them in authentic tasks that use these subjects. Embedding learning within authentic activities is a process described as "situated cognition" (Brown, Collins, & Duguid, 1989). Austin Youth River Watch students must use mathematics calculations and measurements to conduct water quality tests. They also use chemicals in their tests so they must learn about chemical properties in order to understand the results of their tests. Additionally, students write up reports that are sent to the Lower Colorado River Authority (LCRA). They also present their studies at a school symposium and at the annual river watch symposium. In sum, the Austin Youth River Watch Program is providing a situated cognition experience in which at-risk students are learning and practicing mathematics, science, English, and environmental studies.

PROGRAM DESCRIPTION

Program Design

To meet program goals, the program design stipulates that eleventh- and twelfth-grade student "mentors" who are experienced in river water monitoring are hired to work with ninth- and tenth-grade at-risk student "trainees." The mentors are required to conduct chemical and biological monitoring with the trainees at a designated monitoring station located on one of the 22 creeks within the City of Austin that feed into the Colorado River. Mentors are also paid to tutor the trainees in mathematics and/or science for at least two hours per week. At-risk students are paid for both their river water monitoring and tutorial involvement.

During the 1993-94 school year, Austin Youth River Watch participants conducted water quality tests on Walnut, Blunn, Shoal, Boggy, Waller, and Williamson Creeks, as well as two sites on the Colorado River. Each week, measurements and tests were conducted for eight water quality parameters. The parameters, described in Figure 1, are dissolved oxygen (DO), temperature, conductivity, total dissolved solids (TDS), pH, secchi depth, fecal coliform bacteria, ortho-phosphorus, and nitrate/nitrite nitrogen (NO_3/NO_2). The results of each water quality testing session were sent to the Lower Colorado River Authority (LCRA) and added to the data base of water quality testing done throughout the LCRA district.

FIGURE 1
WATER QUALITY PARAMETERS
TESTED BY AUSTIN YOUTH RIVER WATCH PARTICIPANTS

Dissolved oxygen is measured in milligrams per liter (mg/l) and shows the amount of oxygen available to fish and other aquatic organisms.

Temperature is measured in degrees fahrenheit (°F). The temperature of the water determines how much DO the water can hold.

Conductivity and total dissolved solids (TDS) are closely related and give an indication of the salinity of the water. Conductivity is measured as micromhos per centimeter and TDS is reported as milligrams per liter.

pH is a measurement of acidity that ranges from 0-14 standard units, with 7 being neutral. The lower the number the more acid the water.

Secchi disk depth is measured in feet and gives an indication of water clarity. The clearer the water the greater the secchi depth.

Fecal coliform bacteria is measured as the number of colonies per 100 milliliters of water. It is a parameter that may indicate the presence of harmful bacteria.

Ortho-phosphorus and nitrate/nitrite nitrogen are measured as milligrams per liter (mg/l) and are nutrients that can promote excessive aquatic plant growth. Both are products of the natural decomposition of organic material, but they may become elevated downstream of wastewater treatment plants.

Program Implementation

Building on the first year's foundation (see ORE Publication No. 92.33 for information on initial implementation), three program changes were initiated. The first change was to implement a three-month probation period for new students. The three-month probation allowed newly recruited, potential student trainees to participate in the program before being added to the official membership roster. After initial participation, students could then decide if they wanted to join. The probation period also allowed the program coordinator to decline students for membership who were not able to comply fully with membership requirements (i.e., students who have difficulty with excessive absenteeism, tardiness, or behavioral problems that prohibited them from fulfilling water monitoring duties and/or tutorial sessions). The probation period also cleared up previous ambiguities concerning when a student should officially be counted as a participating member.

The second program change concerned the timing and procedures for implementing water quality testing and tutoring. The first year of program implementation revealed that coordinating program activities was often challenging because students lack transportation. To overcome this difficulty, the program coordinator purchased a mini-van for personal and business uses. Utilizing the mini van, he was able to collect the students from local schools (after school, Monday through Thursday), transport them to their designated monitoring sites for data collection and testing, and then take them to the Austin Youth River Watch office. At the office, the students were fed sandwiches and snacks and afterwards they commenced tutoring sessions with the student mentor and the program coordinator. Students were transported back to their homes after tutoring sessions.

The third program change was an experimental venture to allow middle school students, who were relatives and/or friends of existing program members, to join the Austin Youth River Watch Program. The middle school students who remained past the probationary period were treated as full members, receiving pay for their participation in river water testing and tutoring sessions. Most of these middle school students were already identified as being at risk of dropping out of school.

ADDITIONAL PROGRAM ACTIVITIES

Special activities were scheduled approximately once a month to provide students with the opportunity to get to know each other. The events promoted the students' feelings of group cohesiveness and always included water quality as the central theme. These activities included:

- A tour of the Walnut Creek Wastewater Treatment Plant,
- Picnics at Barton Springs,
- A Colorado River Watch Network workshop at Lake Buchanan,
- Overnight camping trips at Lake Buchanan, Pale Face Park, and Pace Bend Park,
- Participating in the Town Lake cleanup,
- Participating in the Annual Diurnal Study, and
- Participating in the Annual Spring Student River Watch Symposium.

The Annual Spring Student River Watch Symposium was held May 5-7, 1994 at Camp Chatauqua and was conducted by community leaders and professional scientists. The symposium offered presentations by LCRA, environmental discussions, and water-related games and activities. Austin Youth River Watch students participated in a poster presentation which displayed their river monitoring data.

Russian Exchange Program

During the summer, six members of the Austin Youth River Watch Program, along with six student members of the Colorado River Watch Network and three adult representatives of the Lower Colorado River Authority, traveled to Russia to conduct a joint water quality study. The three-and-a-half-week trip (June 12 through July 3, 1994) was sponsored by the U.S. Information Agency.

According to selection criteria, American students participating in the Russian Exchange Program were:

- Between the ages of 15-18;
- A river watch monitor for at least two years, one year if an at-risk student in the Austin Youth River Watch Program;
- Proficient in all river watch tests and knowledgeable about the importance of each test; and
- Able to attend workshops in the months before the trip to learn basics of the Russian language, or able to make a substantial effort to learn the language on their own.

In addition to the above requirements, and to assist in the selection process, students were required to write an assay explaining why they wanted to participate in the Russian Exchange Program. Six students were selected from the Austin Youth River Watch Program to be part of the Russian Exchange Program.

In Russia, the American students met with a water monitoring team (the Droplets) at Obninsk College, a private high school in Obninsk, Russia. Together, the two groups camped along, and canoed down, the Pradva River testing the water at various locations. They then compared the quality of the water to that of the Colorado River because the Pradva River has many of the same physical and environmental characteristics as the Colorado River. After traveling down the river, the American students spent a week at a camp in St. Petersburg with 400-500 Russian students. There they conducted water quality studies on area lakes.

As part of the U.S. Information Agency grant, a contingent of Russian students will travel to Austin during the summer of 1995 for a similar water quality study experience on the Colorado River. Austin Youth River Watch students will also participate in this component of the exchange.

STUDENT CHARACTERISTICS

The Austin Youth River Watch participants attended a number of Austin public schools. Although most participants attended Austin public schools, one private middle school, one alternative learning center, and one home study student are also represented in the program. The schools that mentors and trainees attended are listed in Figure 2.

FIGURE 2
SCHOOL LOCATION OF 1993-94
AUSTIN YOUTH RIVER WATCH STUDENTS

SCHOOL	# OF TRAINEES	# OF MENTORS	% OF STUDENTS
Austin HS	1	2	6%
Crockett HS	5	2	13%
Johnston HS	4	0	7%
LBJ HS	8	4	21%
Lanier HS	4	0	7%
Travis HS	6	2	14%
Mendez MS	7	0	13%
Lake Travis MS	1	0	2%
Porter MS	1	0	2%
Home School	1	0	2%
Creative Rapid Learning Center (CRLC)	7	0	13%
TOTAL (N = 46)	46	10	100%

Austin Youth River Watch Trainees

Students considered academically at risk of dropping out of school have a greater probability of leaving school before completing the twelfth grade than students not classified as being at risk. At-risk students attending Austin public schools were identified by ORE in April 1993, and a list was given to the program coordinator for the recruitment of river water monitoring trainees for the Austin Youth River Watch Program. The definitions used by the Texas Education Agency, and AISD, for at-risk identification of secondary (middle and high school) students are as follows:

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- Two or more years older than expected for the grade level,
- Two or more years below grade level in reading or mathematics as measured by a norm-referenced achievement test,
- Two or more F's in a semester,
- Failed at least one of the Mathematics, Reading, or Writing tests on the most recent administration of the Texas Assessment of Academic Skills (TAAS).

For more information concerning at-risk students, see ORE Publication No. 91.41.

Twenty of the twenty-two original 1992-93 trainees (91%) chose to continue their participation in the Austin Youth River Watch program in September 1993. Eight of the students were promoted to mentor positions (see "Student Mentor" section) and ten continued as trainees. However, three of the continuing trainees chose to leave the program later in the fall 1993 semester. Thirty-seven (37) additional students were recruited to join the Austin Youth River Watch Program during the 1993-94 school year which gave the program a total of 46 student trainees.

Among the 47 identified at-risk trainees and mentors (not all trainees and mentors are identified as being at risk) attending Austin public schools, 92% (43 students) are identified as being at risk of dropping out of school. Additionally, *22 of the AISD students (47%) are identified as being overage for their grade level.* Sixth-grade students who are over the age of 11, seventh-grade students who are over the age of 12, eighth-grade students who are over the age of 13, ninth-grade students who are over the age of 14, tenth-grade students over the age of 15, and eleventh-grade students who are over the age of 16, are considered overage for their grade levels. Being overage is considered a major contributing factor to the potential for dropping out of school (Frazer, 1991). Figure 3 displays the age and grade level (or alternative education program) of Austin Youth River Watch trainees. The shaded areas in the table call attention to those students considered overage for their grade level.

FIGURE 3
AGE AND GRADE LEVEL OF 1993-94
AUSTIN YOUTH RIVER WATCH STUDENTS

GRADE LEVEL	AGE 12	AGE 13	AGE 14	AGE 15	AGE 16	AGE 17	AGE 18	AGE 19
6TH GRADE	5	1						
7TH GRADE	2							
8TH GRADE		1						
9TH GRADE			2	6				
10TH GRADE				8	6	2	1	
11TH GRADE					1	2	1	
CRLC					1	1	3	2
HOME SCHOOL					1			
TOTAL (N = 46)	7	2	2	14	9	5	5	2

In general, female participation in advanced mathematics and science courses and careers is below that of males. As Figure 4 illustrates, *the number of male participants in the Austin Youth River Watch program is slightly lower than that of females. However, the ratio of male and female mentors is a 50/50 split.*

FIGURE 4
SEX OF 1993-94
AUSTIN YOUTH RIVER WATCH STUDENTS

SEX	# (%) OF TRAINEES	# (%) OF MENTORS	% OF TOTAL STUDENTS
Male	22 (43%)	5 (50%)	48%
Female	24 (52%)	5 (50%)	52%
TOTAL	46 (100%)	10 (100%)	100%

One goal of the Austin Youth River Watch Program is to increase the participation of minority students in environmental issues and to encourage them to pursue technical careers in science and mathematics. Additionally, a greater proportion of Hispanic and African American students are more likely to be classified as being at risk of dropping out of school than White/Other (see ORE Pub. No. 91.41). As Figure 5 displays, *98% of the trainees are minority students and 80% of the mentors are minority students*. Present trainees may become future mentors in the program, thereby promoting minority leadership and mentorship. Seven of the eight 1992-93 trainees that were promoted to 1993-94 mentor positions were classified as being minority students. The ethnic composition of the trainees and mentors of the Austin Youth River Watch Program is shown in Figure 5.

FIGURE 5
ETHNICITY OF 1993-94
AUSTIN YOUTH RIVER WATCH STUDENTS

ETHNICITY	# (%) OF TRAINEES	# (%) OF MENTORS	% OF TOTAL STUDENTS
Hispanic	21 (46%)	4 (40%)	45%
African American	23 (50%)	3 (30%)	46%
Asian	1 (2%)	1 (10%)	4%
White	1 (2%)	2 (20%)	5%
TOTAL	46 (100%)	10 (100%)	100%

Austin Youth River Watch Mentors

Student mentors were recruited from:

- Participating student members of the Colorado River Watch Network (CRWN), a voluntary, citizen program that monitors the water quality of the Colorado River, and
- Trainees from the 1992-93 Austin Youth River Watch Program who demonstrated expertise in the water monitoring procedures through oral examination.

Of the original 10 mentors from the 1992-93 school year, six graduated from high school, three dropped out of the program, and one remained with the program (a white female) for the 1993-94 school year. One mentor for 1993-94 was recruited from students participating in the Colorado River Watch Network. Eight 1992-93 trainees expressed interest in becoming a 1993-94 mentor (five males, three females; one Asian, four Hispanics, two African Americans, one White). These students demonstrated expertise in water quality procedures and were promoted

to mentor positions. Seven of the eight newly promoted mentors are AISD high school students; the eighth is a student at the Creative Rapid Learning Center.

Experienced, successful students act as project mentors and academic tutors to the less experienced Austin Youth River Watch trainee members. Last year (1992-93), six 12th-grade mentors (60%) graduated from high school. This year, only one mentor is in the 12th grade. If this student graduates, nine of the present (1993-94) mentors may be eligible to continue. The grade levels of both the trainee and mentor participants are given in Figure 6.

FIGURE 6
GRADE LEVEL OF 1993-94
AUSTIN YOUTH RIVER WATCH STUDENTS

GRADE LEVEL	# OF TRAINEES	# OF MENTORS
6	6	0
7	2	0
8	1	0
9	8	1
10	17	1
11	4	7
12	0	1
Creative Rapid Learning Center	7	0
Home Study	1	0
TOTAL	46	10

PROGRAM OUTCOMES

None of the program students dropped out of school and only one of the program students was recommended to be retained at his/her 1993-94 grade level. Additionally, Austin Youth River Watch trainees and at-risk mentors, as a group, achieved a higher grade point average (GPA) than the mean GPA of all AISD high school students.

Because all of the initial 1992-93 mentors were both experienced river water monitors and academically successful (not at risk of dropping out of school), their achievement data were not included in the outcome analysis for the 1992-93 final report. However, all 1992-93 continuing students, including the seven AISD students promoted to mentor positions, are incorporated into the outcome analysis for the 1993-94 year because they continue to be classified as being at risk of dropping out of school.

One of the major goals of the Austin Youth River Watch Program is to reduce the dropout rate of students in Austin high schools. To assess this program goal, ORE's GENeric Evaluation SYStem (GENESYS) was used to compare Austin Youth River Watch Program dropout and retainee statuses with that of the overall District dropout and retainee rates. GENESYS is a method of streamlining data collection and evaluation through use of computer technology and is used to evaluate the effectiveness of dropout prevention programs. GENESYS gathers and reports on specified groups of students outcome information such as student characteristics, achievement, attendance, discipline, grades/credits, dropout status, retention status, and at-risk status. For more information regarding GENESYS, see *GENESYS 1990-91: Selected Program Evaluations* (ORE Publication No. 90.39).

Retainee Status

Many AISD students become overage for their grade as a result of being held back from advancing to the next grade level (see ORE Publication No. 91.41). Being retained is, in turn, a major contributing factor to the potential for dropping out of school. In 1993-94, 9.2% of AISD high school students were recommended to be retained at the end of the 1993-94 school year. Only one of the students (2.9%) participating in the Austin Youth River Watch Program was recommended to be retained at his/her 1993-94 grade level. Therefore, *the retention rate for Austin Youth River Watch Program students was far lower than the retention rate experienced by the District.*

Dropout Status

Of the 35 Austin Youth River Watch participants who were AISD high school students, two (6.8%) were predicted to drop out of school during the 1993-94 school year. Although 85.7% of the program's high school students were classified as being at risk, the State definition of at risk is quite broad, and some students who are identified by the State criteria actually have a low probability of dropping out. Only the students who were at risk for reasons which, historically, have been associated with a high probability of dropping out were included in the prediction. See ORE Publication No. 91.41. for a detailed explanation. *None of the Austin Youth River Watch Program's high school students dropped out of school, which indicates that the program had a positive effect on lowering the dropout rate of the 1993-94 program participants.* Additionally, the Austin Youth River Watch dropout rate for the final six-weeks reporting period of the 1993-94 school year was far lower (0%) than the overall AISD high school dropout rate (8.8%) for the same time period. This comparison means that *the Austin Youth River Watch Program's high school students did better (i.e., stayed in school) than District high school students overall.*

Grade Point Average (GPA)

Most of the trainees (which includes both high school and middle school students) have been identified by AISD as being at risk of dropping out of school. One of the main indications of being at risk is low academic achievement. The student mentors, as well as the program coordinator, tutor student trainees to help raise the academic achievement level of these students.

GENESYS data indicate that *in comparison to all AISD high school students, the GPAs of the Austin Youth River Watch high school trainees were higher for both fall 1993 and spring 1994.* These GPAs are based on a 100-point scale, and comparisons were made on all AISD high school program trainees, plus the mentors that were trainees last year, to see how the program effected the overall high school at-risk program population (N = 35). Even though seven 1992-93 trainees are now mentors within the program, four have retained their at-risk classification.

Figure 7 illustrates the average GPAs for all AISD high school students and the Austin Youth River Watch at risk students for fall 1993 and spring 1994.

FIGURE 7
1993-94 AVERAGE GPA FOR AISD HIGH SCHOOL STUDENTS AND AUSTIN YOUTH RIVER WATCH TRAINEES AND AT-RISK MENTORS

	AISD GPA AVERAGE	AUSTIN YOUTH RIVER WATCH GPA AVERAGE
Fall 1993	79.2	82.3
Spring 1994	79.3	81.8

STUDENT SURVEY

Students indicated that participation in the Austin Youth River Watch Program had helped them to become more interested, and to perform better, in science and mathematics courses. They also indicated that they were able to make new friends, enjoyed the activities, learned the importance of water quality, and welcomed the money they earned from their participation. Students agreed that they would encourage others to participate in the Austin Youth River Watch Program and that they plan to continue their participation in the program.

At the end of the 1993-94 school year Austin Youth River Watch participants were asked to complete an ORE-designed questionnaire. Most of the items were rated on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree" (two were yes-no items). There were also five (5) open-ended questions to allow students to give unconstrained answers. Twenty-six (22 trainees, 4 mentors) of the 56 participants returned their questionnaires (a 46% response rate). Because the response rate is only 46%, these findings may or may not represent the opinions of the majority of participants.

The focus of the questionnaire was on the trainees' perception of program benefits and experiences (see Figures 8, 9 and 10). *All of the respondents agreed (responded "yes") that they would encourage others to participate in the Austin Youth River Watch Program and that they planned to continue their participation.* Additionally, most of the participants strongly agreed or agreed that participation had helped them to:

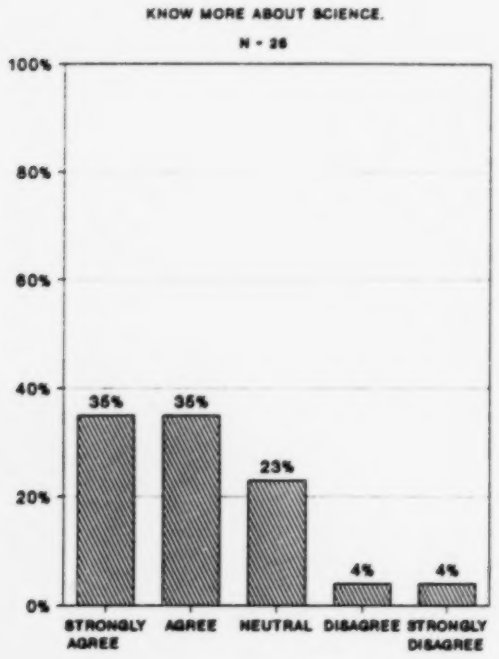
- Know more about environmental issues (85%),
- Know more about science (69%), and
- Know more about water issues (100%).

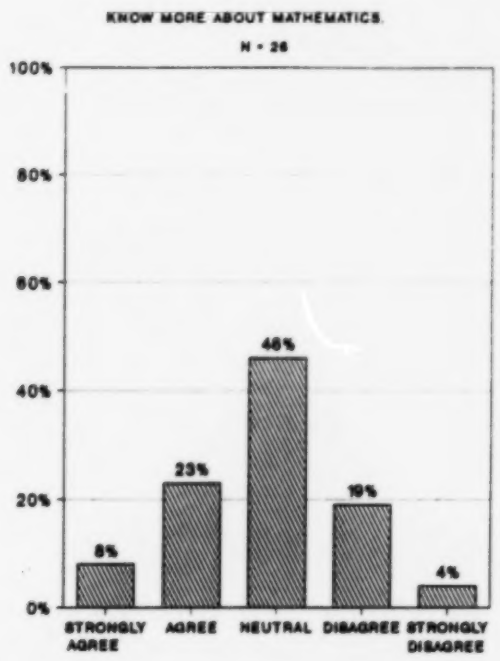
Many students also responded that they were more interested in environmental issues, science, mathematics, and water pollution issues because of their participation in the Austin Youth River Watch Program. Because of the tutoring they received in the Austin Youth River Watch Program, many students strongly agreed or agreed that they were:

- Learning more about mathematics/science (50%),
- More interested in school work (54%),
- Doing better in their school work (69%), and
- More interested in going to school (54%).

See Figures 8, 9, and 10 for detailed information concerning the student survey.

FIGURE 8
RESPONSES BY STUDENTS TO:
"PARTICIPATING IN THE AUSTIN YOUTH RIVER WATCH PROGRAM HAS HELPED ME TO:"





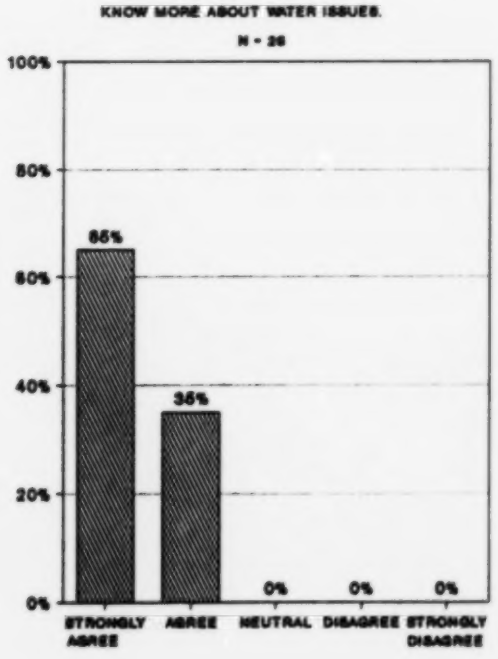
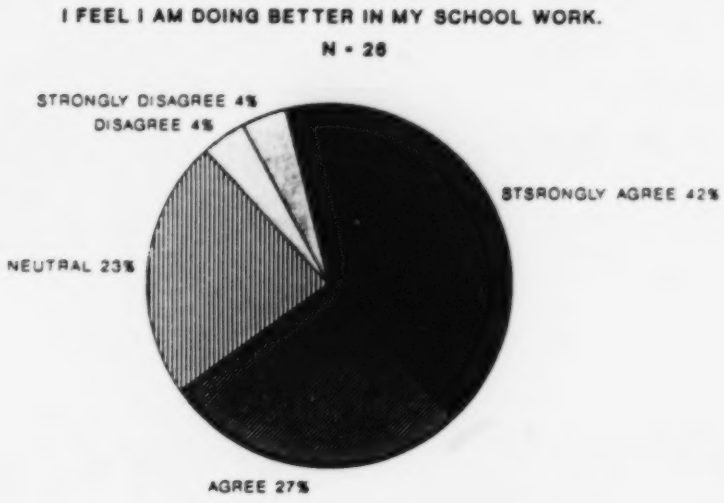


FIGURE 9
RESPONSES BY STUDENTS TO:
"BECAUSE OF THE TUTORING I HAVE RECEIVED IN THE AUSTIN YOUTH RIVER WATCH PROGRAM:"



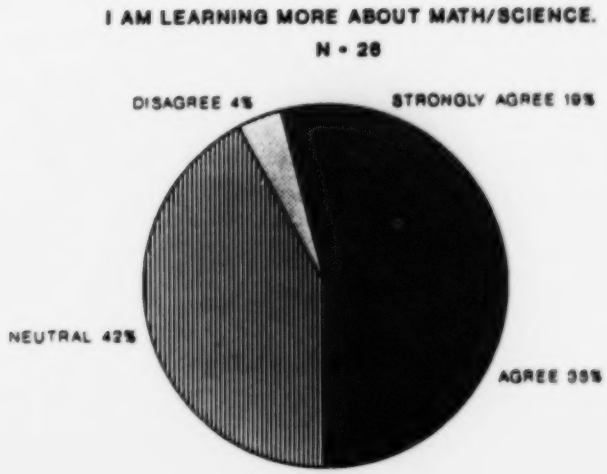


FIGURE 10
AUSTIN YOUTH RIVER WATCH 1992-93
SURVEY RESULTS

Total # participants 56

Total # respondents 26

Response rate 46%

	Strongly Agree A	B	C	D	Strongly Disagree E
Participating in the Austin Youth River Watch Program has helped me to:					
Know more about environmental issues	38%	46%	15%	0	0
Know more about science	35%	35%	23%	4%	4%
Know more about mathematics	8%	23%	46%	19%	4%
Know more about water issues	65%	35%	0	0	0
Because of participating in the Austin Youth River Watch Program, I am more interested in:					
environmental issues	50%	30%	12%	0	8%
science	27%	30%	23%	12%	8%
mathematics	0	56%	16%	24%	4%
water pollution issues	58%	34%	8%	0	0
Because of the tutoring I have received in the Austin Youth River Watch Program:					
I am learning more about math/science	19%	35%	42%	4%	0
I am learning more about English	12%	8%	52%	12%	16%
I am more interested in my school work	32%	24%	40%	0	4%
I feel I am doing better in my school work	42%	27%	23%	4%	4%
I enjoy going to school more than I did before	27%	9%	59%	5%	0
My participation in the AYRW has been very important to me:	68%	32%	0	0	0

	YES	NO
Would you encourage others to participate in the AYRW?	100%	0
Do you plan to continue your participation?	100%	0

Trainees offered the following comments to the question, "How did you use the knowledge of math, science, environmental issues and/or English in testing the river water?"

- All the tests consisted of figuring out overall averages of the different chemicals used.
- I use math to calculate the results [of the tests]. Science helps me analyze what caused the test results to come out the way they did. Through the river watch, I've heard about more environmental issues and my knowledge about them has increased.
- I use the knowledge [of math, science, environmental issues and English] to do the tests correctly.
- I used math in the measurement of chemicals, and science was used to know about the water and its problems. [My knowledge of] environmental issues was used at discussion times, and English [was used] to help me write better.
- We use math to figure out the [test] results, science to know what we are doing to help our Earth, and English to write in our journal about what we did.

Trainees responding to the question, "What is the most important thing you have learned about river water through the Austin Youth River Watch Program?" commented:

- The problems and the battles that are fought to help our environment.
- I learned that water is very important and that it will not always be available; also, that we need to care for it.
- How to test the water and learn more about the environment.
- How the Earth is important and that we shouldn't pollute it.
- What you see is not what you get. I've learned that just because water looks clean [it] doesn't mean it is.
- How to use equipment in science.
- I have learned more about water and how important it is. Also, monitoring water is very important.
- I learned that there are a lot of chemicals in the water.

In responding to the question, "What did you <u>most</u> enjoy about your participation in the Austin Youth River Watch Program?" trainees commented:

- That it is helping me to learn more about science, and [I like] the money.
- That you get to learn new things and meet new people.

- I can come do my homework and meet people from different places.
- Going to Russia!
- Meeting new people and going to the workshops, symposium, and seminars.
- Going on the little hikes.
- The things I liked best were the trips to the creeks and the picnics. What I like the very most was going to make presentations at schools.
- [I liked] the people, and Daniel, and it's fun, because it's like a job, but not really.

In answering the question, "How has participating in the Austin Youth River Watch Program affected you?" trainees offered:

- It keeps me out of trouble from the law [and gave] me different experiences.
- My participation has been affected a lot because I care more about the future. It has also made me more aware of what's going on.
- It's affected me a lot. I'm doing better in school and getting good grades.
- I learned how to care about the environment. It has helped me to learn science and become more interested about it.
- It has affected me by having a job and also having a place to study and do homework.
- My grades have gotten better, and also my self-esteem.
- It affected me by my wanting to learn more about the water.
- It keeps me off the streets and more into my science field.
- It made me think about my future more.

SERVICE TO THE COMMUNITY

In addition to encouraging at-risk students to improve their mathematics and science skills, enhance their interest and knowledge about environmental issues, and remain in school; the Austin Youth River Watch mentors and trainees have performed a valuable service to the City of Austin. During the past year, results of each water quality testing session were sent to the Lower Colorado River Authority (LCRA) and added to the data base of water quality testing done throughout the LCRA district. *Through the students' participation in the Austin Youth River Watch Program, the water quality data base of the Colorado River and its tributaries has been enhanced and expanded.*

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